

## Search Plan and Results

### Question

How are non-caloric sweeteners related to energy intake and body weight? (DGAC 2010)

### Date Searched

1/6/2010

### Inclusion Criteria

- March 2006 to January 2010
- Human subjects
- English language
- International
- *Sample size*: Minimum of 10 subjects per study arm; preference for larger sizes, if available
- *Dropout rate*: Less than 20% for trials; preference for smaller dropout rates
- *Ages*: Children, two to 18 years; adults, 19 and older
- *Populations*: Healthy, those with elevated chronic disease risk.

### Exclusion Criteria

- Cross-sectional studies
- Medical treatment or therapy
- Diseased subjects (already diagnosed with disease related to study purpose)
- Hospitalized patients
- Study population not from a developed country as defined by the Human Development Index (<http://hdr.undp.org/en/statistics/>)
- Animal studies
- In vitro studies
- Articles not peer reviewed (Websites, magazine articles, Federal reports, etc.).

### Search Terms: Search Vocabulary

("Body Weight"[Mesh] OR "overweight"[Mesh] OR obesity[mh] OR adiposity[mh] OR "Body Mass Index"[mh]) OR ("Total caloric consumption" OR "energy compensation" OR "dietary compensation" OR "caloric intake" OR appetite OR energy intake[mh]) AND

("Sweetening Agents"[MeSH] OR Non-caloric sweetener\* OR low calorie sweeten\* OR (artificial\* sweeten\*) OR "sugar free" OR saccharin OR aspartame OR acetosulfam OR sucralose OR trichlorosucrose OR neotame OR erythritol OR rebaudioside A OR rebiana OR diet soda\* OR diet drink\* OR intense sweeten\*)

**Note:** Acesulfame-K is an entry substance name under acetosulfam.

## Electronic Databases

PubMed.

**Total hits from all electronic database searches: 105**

**Total articles identified to review from electronic databases: 15**

Articles Identified Via Handsearch or Other Means

### **Hand-search (Two Articles)**

de La Hunty A, Gibson S, Ashwell M. A review of the effectiveness of aspartame in helping with weight control. *Br Nutr Found Nutr Bull.* 2006; 31: 115-128.

Flood JE, Roe LS, Rolls BJ. [The effect of increased beverage portion size on energy intake at a meal.](#) *J Am Diet Assoc.* 2006 Dec; 106(12): 1, 984-1, 990; discussion 1, 990-1, 991. PMID: 17126628.

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Summary of Articles Identified to Review

**Number of Primary Articles Identified: 2**

**Number of Review Articles Identified: 1**

**Total Number of Articles Identified: 3**

**Number of Articles Reviewed but Excluded: 14**

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List of Articles Included for Evidence Analysis

de La Hunty A, Gibson S, Ashwell M. A review of the effectiveness of aspartame in helping with weight control. *Br Nutr Found Nutr Bull.* 2006; 31: 115–128. (Hand search)

Flood JE, Roe LS, Rolls BJ. [The effect of increased beverage portion size on energy intake at a meal.](#) *J Am Diet Assoc.* 2006 Dec; 106(12): 1, 984-1, 990; discussion 1, 990-1, 991. PMID: 17126628. (Hand search)

Fowler SP, Williams K, Resendez RG, Hunt KJ, Hazuda HP, Stern MP. [Fueling the obesity epidemic? Artificially sweetened beverage use and long-term weight gain.](#) *Obesity (Silver*

List of Excluded Articles with Reason

Articles	Reason for Exclusion
Appleton KM, Blundell JE. <a href="#">Habitual high and low consumers of artificially-sweetened beverages: Effects of sweet taste and energy on short-term appetite</a> . <i>Physiol Behav</i> . 2007 Oct 22; 92(3): 479-486. Epub 2007 Apr 27. PMID: 17540414.	Does not answer question; investigated the effects of sweet taste and energy on subsequent short-term appetite in female habitual high and low consumers of artificially sweetened beverages.
Bellisle F, Drewnowski A. <a href="#">Intense sweeteners, energy intake and the control of body weight</a> . <i>Eur J Clin Nutr</i> . 2007 Jun; 61(6): 691-700. Epub 2007 Feb 7. Review. PMID: 17299484.	Study design is narrative review.
Bergen D, Yeh MC. <a href="#">Effects of energy-content labels and motivational posters on sales of sugar-sweetened beverages: stimulating sales of diet drinks among adults study</a> . <i>J Am Diet Assoc</i> . 2006 Nov; 106(11): 1, 866-1, 869. PMID: 17081839.	Does not answer question; examined impact of labels and posters on beverage sales.
Blum JE, Davee AM, Beaudoin CM, Jenkins PL, Kaley LA, Wigand DA. <a href="#">Reduced availability of sugar-sweetened beverages and diet soda has a limited impact on beverage consumption patterns in Maine high school youth</a> . <i>J Nutr Educ Behav</i> . 2008 Nov-Dec; 40(6): 341-347. PMID: 18984489.	Does not answer question; examined impact of reducing availability of SSBs in schools on beverage consumption.
Collins JK, Davis AR, Adams A, Manness N, Perkins-Veazie PM. <a href="#">Consumer acceptability of low-sugar watermelon sweetened with non-calorie sweetener by a Native American community</a> . <i>Int J Food Sci Nutr</i> . 2006 Aug-Sep; 57(5-6): 363-368. PMID: 17135026.	Does not answer question; examined acceptability of low sugar watermelon sweetened with artificial sweetener.
<a href="#">Dhingra R, Sullivan L, Jacques PF, Wang TJ, Fox CS, Meigs JB, D'Agostino RB, Gaziano JM, Vasan RS. Soft drink consumption and risk of developing cardiometabolic risk factors and the metabolic syndrome in middle-aged adults in the community</a> .	Does not include artificial sweeteners in analyses; considers soft drink intake.

*Circulation.* 2007 Jul 21; 116(2). 480-488. Epub 2007 Jul 23. Erratum in: *Circulation.* 2007 Dec 4; 116(23): e557. PMID: 17646581.

Elfhag K, Tynelius P, Rasmussen F. [Sugar-sweetened and artificially sweetened soft drinks in association to restrained, external and emotional eating](#). *Physiol Behav.* 2007 Jun 8; 91(2-3): 191-195. Epub 2007 Mar 2. PMID: 17434544.

Klein DA, Boudreau GS, Devlin MJ, Walsh BT. [Artificial sweetener use among individuals with eating disorders](#). *Int J Eat Disord.* 2006 May; 39(4): 341-345. PMID: 16523474.

Leth T, Jensen U, Fagt S, Andersen R. [Estimated intake of intense sweeteners from non-alcoholic beverages in Denmark, 2005](#). *Food Addit Contam Part A Chem Anal Control Expo Risk Assess.* 2008 Jun; 25(6): 662-668. PMID: 18484294.

Malinauskas BM, Raedeke TD, Aeby VG, Smith JL, Dallas MB. [Dieting practices, weight perceptions, and body composition: A comparison of normal weight, overweight, and obese college females](#). *Nutr J.* 2006 Mar 31; 5: 11. PMID: 16579846; PMCID: PMC1456978.

Mattes RD, Popkin BM. [Nonnutritive sweetener consumption in humans: effects on appetite and food intake and their putative mechanisms](#). *Am J Clin Nutr.* 2009 Jan; 89(1): 1-14. Epub 2008 Dec 3. Review. PMID: 19056571; PMCID: PMC2650084.

O'Connor TM, Yang SJ, Nicklas TA. [Beverage intake among preschool children and its effect on weight status](#). *Pediatrics.* 2006 Oct; 118(4): e1, 010-e1, 018. PMID: 17015497.

Renwick AG. [The use of a sweetener substitution method to predict dietary exposures for the intense sweetener rebaudioside A](#). *Food Chem Toxicol.* 2008 Jul; 46 Suppl 7: S61-S69. Epub 2008 May 16. PMID: 18547702.

Wang YC, Ludwig DS, Sonneveld K, Gortmaker SL. [Impact of change in sweetened caloric beverage consumption on energy intake among children and adolescents](#). *Arch Pediatr Adolesc Med.* 2009 Apr; 163(4): 336-343. PMID: 19349562.

Study design is cross-sectional.

Does not answer question; examined use of artificial sweeteners by those with eating disorders.

Does not answer question; describes intake of intense sweeteners in Denmark.

Does not answer question; describes dieting practices of college females.

Study design is narrative review.

Study design is secondary analysis of cross-sectional study.

Does not answer question; describes dietary intake of rebaudioside A.

Study design is secondary analysis of cross-sectional study.

